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ORANGE COUNTY WATER DISTRICT

ORANGE COUNTY'S GROUNDWATER AUTHORITY

April 15, 2011

Mr. Mark Smythe
Santa Ana Regional Water Quality Control Board
Attn: Coastal Storm Water Unit
3737 Main Street, Suite 500
Riverside, CA 92501

Subject: Comments on Draft Model Water Quality Management Plan and Technical Guidance Document, Submitted by the County of Orange, Orange County Flood Control District and the Incorporated Cities of Orange County

Dear Mr. Smythe:

The Orange County Water District (OCWD) is a special district formed in 1933 to manage the Orange County Groundwater Basin. The basin currently provides approximately two-thirds of the drinking water for 2.5 million residents of north and central Orange County within the District's boundary.

In 1949, OCWD began actively managing recharge of surface water, including stormwater, into the groundwater basin. OCWD operates 30 recharge facilities in the Cities of Anaheim and Orange and unincorporated areas of Orange County. Stormwater capture and recharge provides the equivalent of a year's worth of drinking water for approximately 100,000 families (50,000 acre-feet per year). Given water supply realities in southern California, use of stormwater for groundwater recharge is a key water resources management strategy.

OCWD actively participated as a stakeholder in the Technical Advisory Group (TAG) that worked with the County of Orange in drafting the Model Water Quality Management Plan (WQMP) and Technical Guidance Document (TGD). These documents, in coordination with the Santa Ana Regional Water Quality Control Board's guidance, provide an important opportunity to advance both the region's goals of promoting low impact development (LID) and increasing drinking water supplies.

OCWD supports the March 22, 2011 draft versions of the Model WQMP and TGD and has specific comments regarding facilitating regional approaches to increase groundwater recharge volumes and provide for effective long-term maintenance and monitoring.

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The location where infiltration occurs is critical. For infiltration to provide a water supply benefit, it needs to occur in a portion of the groundwater basin where the infiltration will replenish the aquifers that are pumped. There are areas of the groundwater basin where infiltration would provide little, if any, benefit to the water supply because the infiltrated water would not reach the aquifers that are pumped for water supply. In such areas, it would be more effective from a water supply perspective to not infiltrate in that local area, but relocate the infiltration to a more suitable location where the infiltration replenishes the aquifers that are pumped.

While we are generally supportive on on-site infiltration, we are concerned that individual, small-scale infiltration facilities will not be maintained properly over the long term and their performance will suffer – negating both LID principles and sustainable recharge of groundwater. OCWD's experience through more than sixty years of operating groundwater recharge facilities is that all infiltration facilities suffer from decreasing recharge performance unless properly maintained. Additional information regarding performance of infiltration systems and concerns about on-site infiltration are provided in Attachment One.

Regional infiltration facilities should be an equal alternative to on-site LID as a means to comply with the MS4 permit.

The fourth-term permit allows for the use of alternatives where on-site infiltration is deemed infeasible. These alternatives include regional and sub-regional programs and alternative and in-lieu programs. Implementing LID principles on a regional basis on an equal footing with on-site LID will result in (1) more effective control of stormwater, (2) increased infiltration rates, and (3) greater pollutant removal efficiency consistent with the stated goal of the permit: "…to reduce to the maximum extent practicable, the discharge of pollutants in urban storm water from the MS4s in order to support attainment of water quality standards."

Accordingly, the following principles should be more clearly spelled out in the Model WQMP and TGD so that a Board-approved regional program can be effective:

1. Participation in a Board-approved regional alternative compliance program should be permitted without requiring the applicant to exhaust the possibility of on-site LID.

2. Participation in a Board-approved regional program should be allowed if the net pollutant removal effectiveness in the watershed is the same or better than would be achieved with the on-site alternatives.

3. Projects downstream or upstream of the regional facility should be allowed to participate in a regional program when located in the same watershed if the net pollutant removal load is equivalent or greater than would be achieved on-site.

4. New development or significant redevelopment should be able to use credits created by the removal of the pollutant loads from existing development using regional facilities if the net pollutant removal load is equal to or greater than would be achieved on-site.

5. In-lieu payments for the support of the regional program from projects within the watershed should support the creation and maintenance of regional and sub-regional infiltration facilities.

Conclusion

As the County of Orange and co-permittees implement the provisions of the fourth term MS4 permit we urge the Regional Board to encourage development of a program striking a balance between requiring on-site LID controls and utilizing alternative compliance approaches which (1) improve surface water quality, (2) maximize beneficial use of stormwater for water supply, and (3) protect groundwater quality.

A partnership including the Santa Ana Regional Board, the County of Orange, municipalities, landowners, OCWD, and other stakeholders will allow our entire community to leverage all available areas of expertise in water quality and water resource management.

Attachment One provides additional comments regarding protecting groundwater quality and specific information regarding clogging of recharge facilities.

Sincerely,

Michael R. Markus, P.E.
General Manager

Attachment: Additional Comments and Information Related to Groundwater Recharge

Copy: Richard Boon, County of Orange
Kevin Hunt, MWDOC

Attachment One
Additional Comments and Information Related to Groundwater Recharge

The fourth term MS4 permit sets new requirements for on-site infiltration of stormwater for new developments and significant re-development. Appropriately, the Model WQMP requires a careful evaluation of environmental constraints to infiltration, including soil conditions, groundwater levels, existing soil and groundwater contamination, naturally occurring contamination, liquefaction potential, and slope stability. OCWD supports the protections for groundwater quality in the current version of the Model WQMP and TGD which, for example, reflect the minimum separation requirements between structural infiltration BMPs and seasonal high groundwater levels, as identified in the permit. These protections are important to protect groundwater quality.

Achieving and maintaining effective infiltration rates on both small and large facilities requires a commitment of time, expertise, and funds. OCWD has worked to develop specific methods, equipment, and techniques to remove clogging layers in recharge facilities. Clogging layers accumulate in recharge facilities due to sediment and/or nutrients in the recharge water. These clogging layers reduce the infiltration rate and require facilities to implement regular maintenance to restore the original infiltration rate. Our surface recharge basins must be drained and cleaned as often as every three months.

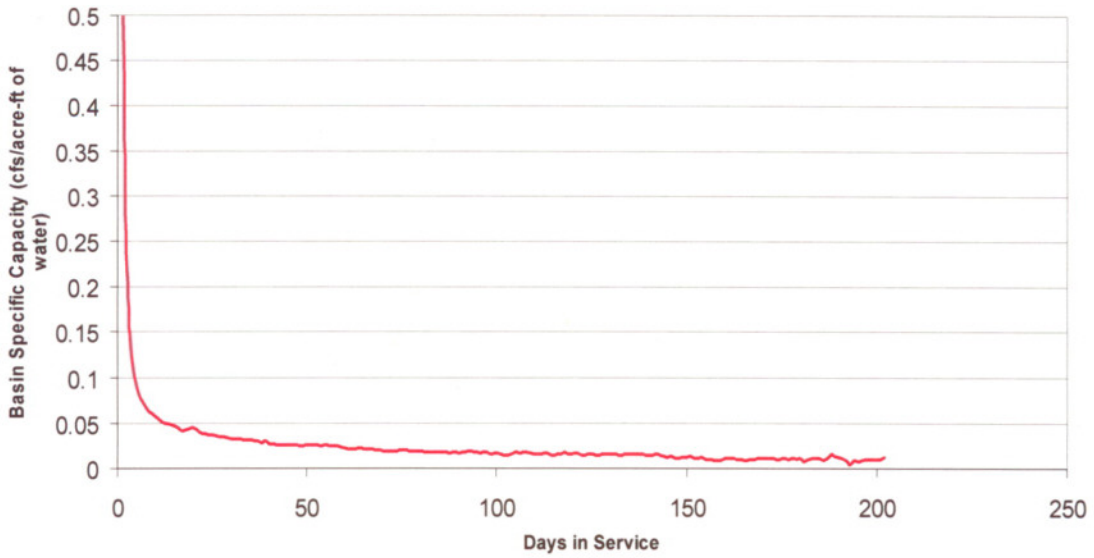
Figure 1 shows the infiltration or recharge performance of Anaheim Lake. This figure shows the infiltration rate in terms of the basin specific capacity through time. The basin specific capacity is the recharge rate in cubic feet per second (cfs) per acre-foot of water in the basin. Figure 1 illustrates the rapid decline in infiltration rate that occurs as the facility is in service recharging water. This occurs primarily due to sediment accumulation in the basin.

Even with highly treated water with little to no detectable sediment, our recharge basins still clog, although at a slower rate.

OCWD operates injection wells using highly-treated recycled water that contains little or no detectable suspended sediment. Even using this highly-treated water, these recharge wells still have declines in recharge performance that reduce the amount of water that can be recharged. The injection wells have to be regularly maintained to sustain their performance.

Even in cases where runoff is pre-treated to remove sediment, infiltration systems are subject to clogging. It is only a matter of time. Effective pre-treatment can reduce the frequency of maintenance, but it does not eliminate it.

Figure 1
Anaheim Lake Recharge Capacity
(average capacity with Santa Ana River water)



Regarding infiltration trenches, OCWD has conducted tests on two different types of horizontal infiltration trenches and observed declining infiltration rates over time in both tests. These two tests involved infiltrating water with very low sediment concentrations. In one case, the infiltration water was imported water purchased from the Metropolitan Water District of Southern California. The infiltration water was also pre-treated prior to it being introduced into the infiltration trench. In this test, the horizontal infiltration trench had 100 foot of perforated pipe. During the test, the infiltration trench lost 50 percent of its infiltration capacity in 35 days. In another test, reverse osmosis treated water was introduced into a 100-foot long infiltration trench and the trench lost 50 percent of its infiltration capacity in four months. The declining performance through time observed in these two test could be caused by a number of factors, but the tests highlight that infiltration systems are subject to clogging and must be maintained to sustain their performance. Although stormwater infiltration systems at individual sites would not be used continuously, this will not preclude them being subject to clogging. Infiltration systems that are not used continuously may not clog as rapidly as systems in continuous use, but they will still suffer declining performance through time.

Reliance on individual property owners or property managers to effectively maintain infiltration facilities on a site-by-site basis may not achieve the permit's goals in the long-term. Factors that will tend to lessen recharge performance of

infiltration systems at individual sites are changes of property ownership and changes of facility maintenance. We are concerned that subsequent owners and property managers will not be inclined to monitor and maintain infiltration systems that are often out-of-sight. We are also concerned that infiltration systems could become locations for improper disposal of hazardous materials, leading to groundwater contamination.